ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CLASS II PERMIT

COMPANY: *Praxair, Inc.*
FACILITY: *Praxair, Inc.*
PERMIT #: *31094*
DATE ISSUED: ***Draft***
EXPIRY DATE:

SUMMARY

This Class II, synthetic minor operating permit is issued to Praxair, Inc., the Permittee, for the operation of their chemical synthesis and repackaging facility located in Kingman, Arizona. This facility manufactures arsine and phosphine, and fills and warehouses gaseous products used by the semiconductor industry. These gaseous products include diethyltelluride, silane, diborane, dichlorosilane, trichlorosilane, ammonia, hexafluoroethane, octafluorocyclobutane, octafluorotetrahydrofuran, perfluoropropane, tetrafluoromethane, trifluoromethane, sulfur hexafluoride, argon, helium, hydrogen and nitrogen. The facility is equipped with four Guardian combustion units, an ammonia scrubber, four caustic scrubbers, and a Ventilation Emergency Scrubber (VES) to control the emissions of the above mentioned chemicals. This permit ensures that the facility operates as a minor source of Hazardous Air Pollutants (HAPs), with the potential to emit, after controls, of 0.144 tons per year (tpy) of ammonia, 0.00204 tpy of arsine, and smaller amounts of other HAPs. This facility is considered a true minor source of criteria pollutants.

This permit is issued in accordance with Arizona Revised Statutes (A.R.S.) §49-426. It contains requirements from Title 18, Chapter 2 of the Arizona Administrative Code (A.A.C.).

TABLE OF CONTENTS

ATTACHMENT "A": GENERAL PROVISIONS

Air Quality Control Permit No. 31094
For
Praxair, Inc.

I. PERMIT EXPIRATION AND RENEWAL

[ARS § 49-426.F, A.A.C. R18-2-304.C.2, and -306.A.1]

A. This permit is valid for a period of five years from the date of issuance.

B. The Permittee shall submit an application for renewal of this permit at least 6 months, but not more than 18 months, prior to the date of permit expiration.

II. COMPLIANCE WITH PERMIT CONDITIONS

[A.A.C. R18-2-306.A.8.a and b]

A. The Permittee shall comply with all conditions of this permit including all applicable requirements of the Arizona air quality statutes and air quality rules. Any permit noncompliance is grounds for enforcement action; for permit termination, revocation and reissuance, or revision; or for denial of a permit renewal application. In addition, noncompliance with any federally enforceable requirement constitutes a violation of the Clean Air Act.

B. It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

III. PERMIT REVISION, REOPENING, REVOCATION AND REISSUANCE, OR TERMINATION FOR CAUSE

[A.A.C. R18-2-306.A.8.c, -321.A.1.c-d, and -321.A.2]

A. The permit may be revised, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit revision, revocation and reissuance, termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

B. The permit shall be reopened and revised under any of the following circumstances

1. The Director or the Administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.

2. The Director or the Administrator determines that the permit needs to be revised or revoked to assure compliance with the applicable requirements.

C. Proceedings to reopen and reissue a permit, including appeal of any final action relating to a permit reopening, shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of the permit for which cause to reopen exists. Such reopenings shall be made as expeditiously as practicable. Permit reopenings shall not result in a resetting of the five-year permit term.

IV. POSTING OF PERMIT

[A.A.C. R18-2-315]

A. The Permittee shall post this permit or a certificate of permit issuance where the facility is located in such a manner as to be clearly visible and accessible. All equipment covered by this permit shall be clearly marked with one of the following:

1. Current permit number; or

2. Serial number or other equipment ID number that is also listed in the permit to identify that piece of equipment.

B. A copy of the complete permit shall be kept on site.

V. FEE PAYMENT [A.A.C. R18-2-306.A.9 and -326]

The Permittee shall pay fees to the Director pursuant to ARS § 49-426(E) and A.A.C. R18-2-326.

VI. ANNUAL EMISSION INVENTORY QUESTIONNAIRE [A.A.C. R18-2-327.A and B]

A. The Permittee shall complete and submit to the Director an annual emissions inventory questionnaire. The questionnaire is due by March 31st or ninety days after the Director makes the inventory form available each year, whichever occurs later, and shall include emission information for the previous calendar year.

B. The questionnaire shall be on a form provided by the Director and shall include the information required by A.A.C. R18-2-327.

VII. COMPLIANCE CERTIFICATION [A.A.C. R18-2-309.2.a, -309.2.c-d, and -309.5.d]

A. The Permittee shall submit a compliance certification to the Director semiannually which describes the compliance status of the source with respect to each permit condition. The first certification shall be submitted no later than May 15th, and shall report the compliance status of the source during the period between October 1st of the previous year and March 31st of the current year. The second certification shall be submitted no later than November 15th, and shall report the compliance status of the source during the period between April 1st and September 30th of the current year.

The compliance certifications shall include the following:

1. Identification of each term or condition of the permit that is the basis of the certification;

2. The Identification of the methods or other means used by the Permittee for determining the compliance status with each term and condition during the certification period;

3. The status of compliance with the terms and conditions of the permit for the period covered by the certification, including whether compliance during the period was continuous or intermittent. The certification shall be based on the methods or means designated in Condition VII.A.2 above. The certifications shall identify each deviation and take it into account for consideration in the compliance certification;

4. All instances of deviations from permit requirements reported pursuant to Condition XII.B of this Attachment; and

5. Other facts the Director may require in determining the compliance status of the source.

B. A progress report on all outstanding compliance schedules shall be submitted every six months beginning with six months after permit issuance.

VIII. CERTIFICATION OF TRUTH, ACCURACY AND COMPLETENESS [A.A.C. R18-2-304.H]

Any application, form, report or compliance certification required to be submitted by this permit, including reports, shall contain a certification by a responsible official of truth, accuracy, and

completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

IX. INSPECTION AND ENTRY [A.A.C. R18-2-309.4]

Upon presentation of proper credentials, the Permittee shall allow the Director or the authorized representative of the Director to:

A. Enter upon the Permittee's premises where a source is located, emissions-related activity is conducted, or where records are required to be kept under the conditions of the permit;

B. Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of the permit;

C. Inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

D. Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements; and

E. Record any inspection by use of written, electronic, magnetic and photographic media.

X. PERMIT REVISION PURSUANT TO FEDERAL HAZARDOUS AIR POLLUTANT STANDARD [A.A.C. R18-2-304.C]

If this source becomes subject to a standard promulgated by the Administrator pursuant to Section 112(d) of the Act, then the Permittee shall, within twelve months of the date on which the standard is promulgated, submit an application for a permit revision demonstrating how the source will comply with the standard.

XI. ACCIDENTAL RELEASE PROGRAM [40 CFR Part 68]

If this source becomes subject to the provisions of 40 CFR Part 68, then the Permittee shall comply with these provisions according to the time line specified in 40 CFR Part 68.

XII. EXCESS EMISSIONS, PERMIT DEVIATIONS, AND EMERGENCY REPORTING

A. Excess Emissions Reporting [A.A.C. R18-2-310.01.A and -310.01.B]

1. Excess emissions shall be reported as follows:

a. The Permittee shall report to the Director any emissions in excess of the limits established by this permit. Such report shall be in two parts as specified below:

(1) Notification by telephone or facsimile within 24 hours of the time when the Permittee first learned of the occurrence of excess emissions including all available information from Condition XII.A.1.b below.

(2) Detailed written notification by submission of an excess emissions report within 72 hours of the notification pursuant to Condition XII.A.1.a.(1) above.

b. The report shall contain the following information:

(1) Identity of each stack or other emission point where the excess emissions occurred;

(2) Magnitude of the excess emissions expressed in the units of the applicable emission limitation and the operating data and calculations used in determining the magnitude of the excess emissions;

(3) Date, time and duration, or expected duration, of the excess emissions;

(4) Identity of the equipment from which the excess emissions emanated;

(5) Nature and cause of such emissions;

(6) If the excess emissions were the result of a malfunction, steps taken to remedy the malfunction and the steps taken or planned to prevent the recurrence of such malfunctions; and

(7) Steps taken to limit the excess emissions. If the excess emissions resulted from start-up or malfunction, the report shall contain a list of the steps taken to comply with the permit procedures.

2. In the case of continuous or recurring excess emissions, the notification requirements of this section shall be satisfied if the source provides the required notification after excess emissions are first detected and includes in such notification an estimate of the time the excess emissions will continue. Excess emissions occurring after the estimated time period, or changes in the nature of the emissions as originally reported, shall require additional notification pursuant to Condition XII.A.1 above.

[A.A.C. R18-2-310.01.C]

B. Permit Deviations Reporting [A.A.C. R18-2-306.A.5.b]

The Permittee shall promptly report deviations from permit requirements, including those attributable to upset conditions as defined in the permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. Prompt reporting shall mean that the report was submitted to the Director by certified mail, facsimile, or hand delivery within two working days of the time when emission limitations were exceeded due to an emergency or within two working days of the time when the owner or operator first learned of the occurrence of a deviation from a permit requirement.

C. Emergency Provision [A.A.C. R18-2-306.E]

1. An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, that require immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if Condition XII.C.3 is met.

3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An emergency occurred and that the Permittee can identify the cause(s) of the emergency;

b. The permitted facility was being properly operated at the time;

c. During the period of the emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and

d. The Permittee submitted notice of the emergency to the Director by certified mail, facsimile, or hand delivery within two working days of the time when emission limitations were exceeded due to the emergency. This notice shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective action taken.

4. In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.

5. This provision is in addition to any emergency or upset provision contained in any applicable requirement.

D. Compliance Schedule [ARS § 49-426.I.5]

For any excess emission or permit deviation that cannot be corrected with 72 hours, the Permittee is required to submit a compliance schedule to the Director within 21 days of such occurrence. The compliance schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with the permit terms or conditions that have been violated.

E. Affirmative Defenses for Excess Emissions Due to Malfunctions, Startup, and Shutdown [A.A.C. R18-2-310]

1. Applicability

This rule establishes affirmative defenses for certain emissions in excess of an emission standard or limitation and applies to all emission standards or limitations except for standards or limitations:

a. Promulgated pursuant to Sections 111 or 112 of the Act;

b. Promulgated pursuant to Titles IV or VI of the Clean Air Act;

c. Contained in any Prevention of Significant Deterioration (PSD) or New Source Review (NSR) permit issued by the U.S. EPA;

d. Contained in A.A.C. R18-2-715.F; or

e. Included in a permit to meet the requirements of A.A.C. R18-2-406.A.5.

2. Affirmative Defense for Malfunctions

Emissions in excess of an applicable emission limitation due to malfunction shall constitute a violation. When emissions in excess of an applicable emission limitation are due to a malfunction, the Permittee has an affirmative defense to a civil or administrative enforcement proceeding based on that violation, other than a judicial action seeking injunctive relief, if the Permittee has complied with the reporting requirements of A.A.C. R18-2-310.01 and has demonstrated all of the following:

a. The excess emissions resulted from a sudden and unavoidable breakdown of process equipment or air pollution control equipment beyond the reasonable control of the Permittee;

b. The air pollution control equipment, process equipment, or processes were at all times maintained and operated in a manner consistent with good practice for minimizing emissions;

c. If repairs were required, the repairs were made in an expeditious fashion when the applicable emission limitations were being exceeded. Off-shift labor and overtime were utilized where practicable to ensure that the repairs were made as expeditiously as possible. If off-shift labor and overtime were not utilized, the Permittee satisfactorily demonstrated that the measures were impracticable;

d. The amount and duration of the excess emissions (including any bypass operation) were minimized to the maximum extent practicable during periods of such emissions;

e. All reasonable steps were taken to minimize the impact of the excess emissions on ambient air quality;

f. The excess emissions were not part of a recurring pattern indicative of inadequate design, operation, or maintenance;

g. During the period of excess emissions there were no exceedances of the relevant ambient air quality standards established in Title 18, Chapter 2, Article 2 of the Arizona Administrative Code that could be attributed to the emitting source;

h. The excess emissions did not stem from any activity or event that could have been foreseen and avoided, or planned, and could not have been avoided by better operations and maintenance practices;

i. All emissions monitoring systems were kept in operation if at all practicable; and

j. The Permittee's actions in response to the excess emissions were documented by contemporaneous records

3. Affirmative Defense for Startup and Shutdown

a. Except as provided in Condition XII.E.3.b below, and unless otherwise provided for in the applicable requirement, emissions in excess of an applicable emission limitation due to startup and shutdown shall constitute a violation. When emissions in excess of an applicable emission limitation are due to startup and shutdown, the Permittee has an affirmative defense to a civil or administrative enforcement proceeding based on that violation, other than a judicial action seeking injunctive relief, if the Permittee has complied with the reporting requirements of A.A.C. R18-2-310.01 and has demonstrated all of the following:

(1) The excess emissions could not have been prevented through careful and prudent planning and design;

(2) If the excess emissions were the result of a bypass of control equipment, the bypass was unavoidable to prevent loss of life, personal injury, or severe damage to air pollution control equipment, production equipment, or other property;

(3) The air pollution control equipment, process equipment, or processes were at all times maintained and operated in a manner consistent with good practice for minimizing emissions;

(4) The amount and duration of the excess emissions (including any bypass operation) were minimized to the maximum extent practicable during periods of such emissions;

(5) All reasonable steps were taken to minimize the impact of the excess emissions on ambient air quality;

(6) During the period of excess emissions there were no exceedances of the relevant ambient air quality standards established in Title 18, Chapter 2, Article 2 of the Arizona Administrative Code that could be attributed to the emitting source;

(7) All emissions monitoring systems were kept in operation if at all practicable; and

(8) Contemporaneous records documented the Permittee's actions in response to the excess emissions.

b. If excess emissions occur due to a malfunction during routine startup and shutdown, then those instances shall be treated as other malfunctions subject to Condition XII.E.2 above.

4. Affirmative Defense for Malfunctions During Scheduled Maintenance

If excess emissions occur due to a malfunction during scheduled maintenance, then those instances will be treated as other malfunctions subject to Condition XII.E.2 above.

5. Demonstration of Reasonable and Practicable Measures

For an affirmative defense under Condition XII.E.2 or XII.E.3 above, the Permittee shall demonstrate, through submission of the data and information required by Condition XII.E and A.A.C. R18-2-310.01, that all reasonable and practicable measures within the Permittee's control were implemented to prevent the occurrence of the excess emissions.

XIII. RECORD KEEPING REQUIREMENTS [A.A.C. R18-2-306.A.4]

A. The Permittee shall keep records of all required monitoring information including, but not limited to, the following:

1. The date, place as defined in the permit, and time of sampling or measurements;

2. The date(s) analyses were performed;

3. The name of the company or entity that performed the analyses;

4. A description of the analytical techniques or methods used;

5. The results of such analyses; and

6. The operating conditions as existing at the time of sampling or measurement.

B. The Permittee shall retain records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings or other data recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.

C. All required records shall be maintained either in an unchangeable electronic format or in a handwritten logbook utilizing indelible ink.

XIV. REPORTING REQUIREMENTS [A.A.C. R18-2-306.A.5.a]

The Permittee shall submit the following reports:

A. Compliance certifications in accordance with Section VII of Attachment "A".

B. Excess emission; permit deviation, and emergency reports in accordance with Section XII of Attachment "A".

C. Other reports required by any condition of Attachment "B".

XV. DUTY TO PROVIDE INFORMATION [A.A.C. R18-2-304.G and -306.A.8.e]

A. The Permittee shall furnish to the Director, within a reasonable time, any information that the Director may request in writing to determine whether cause exists for revising, revoking and reissuing, or terminating the permit, or to determine compliance with the permit. Upon request, the Permittee shall also furnish to the Director copies of records required to be kept by the permit. For information claimed to be confidential, the Permittee shall furnish an additional copy of such records directly to the Administrator along with a claim of confidentiality.

B. If the Permittee has failed to submit any relevant facts or has submitted incorrect information in the permit application, the Permittee shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information.

XVI. PERMIT AMENDMENT OR REVISION [A.A.C. R18-2-317.01, -318, -319, and -320]

The Permittee shall apply for a permit amendment or revision for changes to the facility which do not qualify for a facility change without revision under Section XVII, as follows:

A. Facility Changes that Require a Permit Revision - Class II (A.A.C. R18-2-317.01);

B. Administrative Permit Amendment (A.A.C. R18-2-318);

C. Minor Permit Revision (A.A.C. R18-2-319); and

D. Significant Permit Revision (A.A.C. R18-2-320)

The applicability and requirements for such action are defined in the above referenced regulations.

XVII. FACILITY CHANGE WITHOUT A PERMIT REVISION [A.A.C. R18-2-306.A.4 and -317.02]

A. Except for a physical change or change in the method of operation at a Class II source requiring a permit revision under A.A.C. R18-2-317.01, or a change subject to logging or notice requirements in Conditions XVII.B and XVII.C below, a change at a Class II source shall not be subject to revision, notice, or logging requirements under this Section.

B. Except as otherwise provided in the conditions applicable to an emissions cap created under A.A.C. R18-2-306.02, the following changes may be made if the source keeps on site records of the changes according to Appendix 3 of the Arizona Administrative Code:

1. Implementing an alternative operating scenario, including raw materials changes;

2. Changing process equipment, operating procedures, or making any other physical change if the permit requires the change to be logged;

3. Engaging in any new insignificant activity listed in A.A.C. R18-2-101.57.a through A.A.C. R18-2-101.57.i but not listed in the permit;

4. Replacing an item of air pollution control equipment listed in the permit with an identical (same model, different serial number) item. The Director may require verification of efficiency of the new equipment by performance tests; and

5. A change that results in a decrease in actual emissions if the source wants to claim credit for the decrease in determining whether the source has a net emissions increase for any purpose. The logged information shall include a description of the change that will produce the decrease in actual emissions. A decrease that has not been logged is creditable only if the decrease is quantifiable, enforceable, and otherwise qualifies as a creditable decrease.

C. Except as provided in the conditions applicable to an emissions cap created under A.A.C. R18-2-306.02, the following changes may be made if the source provides written notice to the Department in advance of the change as provided below:

1. Replacing an item of air pollution control equipment listed in the permit with one that is not identical but that is substantially similar and has the same or better pollutant removal efficiency: 7 days. The Director may require verification of efficiency of the new equipment by performance tests;

2. A physical change or change in the method of operation that increases actual emissions more than 10% of the major source threshold for any conventional pollutant but does not require a permit revision: 7 days;

3. Replacing an item of air pollution control equipment listed in the permit with one that is not substantially similar but that has the same or better efficiency: 30 days. The Director may require verification of efficiency of the new equipment by performance tests;

4. A change that would trigger an applicable requirement that already exists in the permit: 30 days unless otherwise required by the applicable requirement;

5. A change that amounts to reconstruction of the source or an affected facility: 7 days. For the purposes of this subsection, reconstruction of a source or an affected facility shall be presumed if the fixed capital cost of the new components exceeds 50% of the fixed capital cost of a comparable entirely new source or affected facility and the changes to the components have occurred over the 12 consecutive months beginning with commencement of construction; and

6. A change that will result in the emissions of a new regulated air pollutant above an applicable regulatory threshold but that does not trigger a new applicable requirement for that source category: 30 days. For purposes of this requirement, an applicable regulatory threshold for a conventional air pollutant shall be 10% of the applicable major source threshold for that pollutant.

D. For each change under Condition XVII.C above, the written notice shall be by certified mail or hand delivery and shall be received by the Director the minimum amount of time in advance of the change. Notifications of changes associated with emergency conditions, such as malfunctions necessitating the replacement of equipment, may be provided with less than required notice, but must be provided as far in advance of the change, or if advance notification is not practicable, as soon after the change as possible. The written notice shall include:

1. When the proposed change will occur;

2. A description of the change;

3. Any change in emissions of regulated air pollutants; and

4. Any permit term or condition that is no longer applicable as a result of the change.

E. A source may implement any change in Condition XVII.C above without the required notice by applying for a minor permit revision under A.A.C. R18-2-319 and complying with subsection A.A.C. R18-2-319.D.2 and A.A.C. R18-2-319.G.

F. The permit shield described in A.A.C. R18-2-325 shall not apply to any change made under this Section, other than implementation of an alternate operating scenario under Condition XVII.B.1.

G. Notwithstanding any other part of this Section, the Director may require a permit to be revised for any change that, when considered together with any other changes submitted by the same source under this Section over the term of the permit, constitutes a change under subsection A.A.C. R18-2-317.01.A.

H. If a source change is described under both Conditions XVII.B and XVII.C above, the source shall comply with Condition XVII.C above. If a source change is described under both Condition XVII.C above and A.A.C. R18-2-317.01.B, the source shall comply with A.A.C. R18-2-317.01.B.

I. A copy of all logs required under Condition XVII.B shall be filed with the Director within 30 days after each anniversary of the permit issuance date. If no changes were made at the source requiring logging, a statement to that effect shall be filed instead.

J. Logging Requirements [A.A.C. R18-2-306.A.4]

1. Each log entry required by a change under Condition XVII.B shall include at least the following information:

a. A description of the change, including:

(1) A description of any process change;

(2) A description of any equipment change, including both old and new equipment descriptions, model numbers, and serial numbers, or any other unique equipment ID number; and

(3) A description of any process material change.

b. The date and time that the change occurred.

c. The provision of A.A.C. R18-2-317.02.B that authorizes the change to be made with logging.

d. The date the entry was made and the first and last name of the person making the entry.

2. Logs shall be kept for 5 years from the date created. Logging shall be performed in indelible ink in a bound log book with sequentially number pages, or in any other form, including electronic format, approved by the Director.

XVIII. TESTING REQUIREMENTS [A.A.C. R18-2-312]

A. The Permittee shall conduct performance tests as specified in the permit and at such other times as may be required by the Director.

B. Operational Conditions During Testing

Tests shall be conducted during operation at the maximum possible capacity of each unit under representative operational conditions unless other conditions are required by the applicable test method or in this permit. With prior written approval from the Director, testing may be performed at a lower rate. Operations during periods of start-up, shutdown, and malfunction (as defined in A.A.C. R18-2-101) shall not constitute representative operational conditions unless otherwise specified in the applicable standard.

C. Tests shall be conducted and data reduced in accordance with the test methods and procedures contained in the Arizona Testing Manual unless modified by the Director pursuant to A.A.C. R18-2-312.B.

D. Test Plan

At least 14 calendar days prior to performing a test, the Permittee shall submit a test plan to the Director in accordance with A.A.C. R18-2-312.B and the Arizona Testing Manual. This test plan must include the following:

1. Test duration;

2. Test location(s);

3. Test method(s); and

4. Source operation and other parameters that may affect test results.

E. Stack Sampling Facilities

The Permittee shall provide, or cause to be provided, performance testing facilities as follows:

1. Sampling ports adequate for test methods applicable to the facility;

2. Safe sampling platform(s);

3. Safe access to sampling platform(s); and

4. Utilities for sampling and testing equipment.

F. Interpretation of Final Results

Each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic mean of

the results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs is required to be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the Permittee's control, compliance may, upon the Director's approval, be determined using the arithmetic mean of the results of the other two runs. If the Director or the Director's designee is present, tests may only be stopped with the Director's or such designee's approval. If the Director or the Director's designee is not present, tests may only be stopped for good cause. Good cause includes: forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the Permittee's control. Termination of any test without good cause after the first run is commenced shall constitute a failure of the test. Supporting documentation, which demonstrates good cause, must be submitted.

G. Report of Final Test Results

A written report of the results of all performance tests shall be submitted to the Director within 30 days after the test is performed. The report shall be submitted in accordance with the Arizona Testing Manual and A.A.C. R18-2-312.A.

XIX. PROPERTY RIGHTS [A.A.C. R18-2-306.A.8.d]

This permit does not convey any property rights of any sort, or any exclusive privilege.

XX. SEVERABILITY CLAUSE [A.A.C. R18-2-306.A.7]

The provisions of this permit are severable. In the event of a challenge to any portion of this permit, or if any portion of this permit is held invalid, the remaining permit conditions remain valid and in force.

XXI. PERMIT SHIELD [A.A.C. R18-2-325]

Compliance with the conditions of this permit shall be deemed compliance with all applicable requirements identified in the portions of this permit subtitled "Permit Shield". The permit shield shall not apply to any minor revisions pursuant to Condition XVI.C of this Attachment and any facility changes without a permit revision pursuant to Section XVII of this Attachment.

ATTACHMENT "B": SPECIFIC CONDITIONS

Air Quality Control Permit No. 31094
For
Praxair, Inc.

I. FACILITY WIDE REQUIREMENTS

A. Operating Limitations

1. The Permittee shall operate and maintain all equipment at the facility that is listed in Attachment "D" of this permit in accordance with manufacturer's specifications. If manufacturer's specifications are not available, the Permittee shall develop an Operation and Maintenance Plan for that equipment.

[A.A.C. R18-2-306.A.2]

2. Within 180 days of the issuance date of this permit, the Permittee shall have on-site or on-call a person that is certified in EPA Reference Method 9 for the observation and evaluation of visible emissions.

[A.A.C. R18-2-306.A.3.c]

B. Recordkeeping Requirements

1. The Permittee shall maintain, on-site, records of the manufacturer's specifications or Operation and Maintenance Plan for all equipment utilized at the facility that is listed in Attachment "D" of this permit.

[A.A.C. R18-2-306.A.4]

2. All records, analyses and reports that are required by this permit shall be retained for a minimum of five years from the date of generation. The most recent two years of data shall be kept on-site.

[A.A.C. R18-2-306.A.4]

3. The Permittee shall maintain, on-site, records of the rolling 24-hour total of the hours of operation for the Arsine Guardians, Arsine Baghouses, and the Ventilation Emergency Scrubber.

[A.A.C. R18-2-306.A.3.c]

4. On a daily basis, the Permittee shall record the daily total of the hours of operation for all equipment at the facility that is listed in Attachment "D" of this permit, and not specifically listed in Condition I.B.3 above.

[A.A.C. R18-2-306.A.3.c]

5. On a monthly basis, the Permittee shall record the rolling 365-day total of the hours of operation for all equipment at the facility that is listed in Attachment "D" of this permit.

[A.A.C. R18-2-306.A.3.c]

6. On an hourly basis, the Permittee shall record the rolling 24-hour total of the production of arsine at the facility.

[A.A.C. R18-2-306.A.3.c]

7. At the end of each day, the Permittee shall record the rolling 365-day total of the production of arsine at the facility.

[A.A.C. R18-2-306.A.3.c]

C. Reporting Requirements

1. The Permittee shall submit reports of all monitoring activities required in Attachment "B" along with the compliance certifications required by Section VII of Attachment "A."

2. The Permittee shall notify the Department of any changes to the manufacturer's specifications for all equipment listed in Attachment "D."

[A.A.C. R18-2-306.A.5]

D. Monitoring System Requirements

1. The set point for reportable alarms at the facility shall be as follows:

   a. VES Stack monitor: 8.85 ppb, calibrated for arsine; and

   b. Fenceline monitors: system detection threshold, calibrated for arsine.

2. Reportable alarms resulting from the VES stack monitor or the fenceline monitors shall be reported as follows:

   a. The Permittee shall report to the Director any reportable alarms resulting from the monitors. Such report shall be in two parts as specified below:

      i. Notification by telephone or facsimile within 24 hours of the time when the Permittee first learned of the reportable alarm event including all available information from Condition I.D.2.b below.

      ii. Detailed written notification by submission of a report within 72 hours of the notification pursuant to Condition I.D.2.a.i above.

   b. The report shall contain the following information:

      i. Identity of each monitor involved in the reportable alarm event;

      ii. Magnitude of the pollutant concentration detected by the monitor(s);

      iii. Date, time and duration, or expected duration, of the reportable alarm event;

      iv. Identity of the equipment from which the pollutant(s) emanated;

      v. Nature and cause of such emissions;

      vi. If the reportable alarm event was the result of a malfunction, steps taken to remedy the malfunction and the steps taken or planned to prevent the recurrence of such malfunctions; and

      vii. Steps taken to reduce concentrations below the reportable alarm threshold. If the reportable alarm event resulted from start-up or malfunction, the report shall contain a list of the steps taken to comply with the permit procedures.

3. In the case of continuous or recurring reportable alarm events, the notification requirements of this section shall be satisfied if the source provides the required notification after reportable alarm events occur and includes in such notification an

estimate of the time the reportable alarm event will continue. Reportable alarm events occurring after the estimated time period, or changes in the nature of the emissions as originally reported, shall require additional notification pursuant to Condition I.D.2 above.

[A.A.C. R18-2-306.A.3.c]

II. SYNTHESIS AND HANDLING OPERATIONS

This section applies to the synthesis and handling of arsine, phosphine, diethyltelluride, silane, diborane, dichlorosilane and tetrafluoromethane.

A. Particulate Matter and Opacity

1. Emission Limitations and Standards

a. The opacity of any plume or effluent from any stack shall not be greater than 20%.

[A.A.C. R18-2-702.B.3]

b. If the presence of uncombined water is the only reason for an exceedance of any visible emissions requirement in II.A.1.a, the exceedance shall not constitute a violation of the applicable opacity limit.

[A.A.C. R18-2-702.C]

c. In any one hour period, the Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere in excess of the amounts calculated by the following equations:

(1) For process sources having a process weight rate of 60,000 pounds per hour (30 tons per hour) or less, the maximum allowable emissions shall be determined by the following equation:

$E = 4.1P^{0.67}$

Where:

E = the maximum allowable particulate emission rate in pounds-mass per hour

P = the process weight rate in tons-mass per hour

[A.A.C. R18-2-730.A.1.a]

(2) For process sources having a process weight rate greater than 60,000 pounds per hour (30 tons per hour), the maximum allowable emissions shall be determined by the following equation:

$E = 55.0P^{0.11} - 40$

Where E and P are defined as indicated in II.A.1.c(1) above.

[A.A.C. R18-2-730.A.1.b]

d. When applying the process weight rate equations, the Permittee shall utilize the total process weight from all similar units employing a similar type process to determine the maximum allowable emissions of particulate matter.

[A.A.C. R18-2-730.B]

2. Air Pollution Controls

a. *The Permittee shall install, operate* and maintain *Arsine Baghouse 1 to capture particulate matter emissions from the Arsine Guardian 1 combustion unit in a manner consistent with good air pollution control practices. The effluent of this baghouse shall be directed to the Ventilation Emergency Scrubber (VES)*.

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]
[Material permit conditions are indicated by underline and italics]

b. *The Permittee shall install, operate* and maintain *Arsine Baghouse 2 to capture particulate matter emissions from the Arsine Guardian 2 combustion unit in a manner consistent with good air pollution control practices. The effluent of this baghouse shall be directed to the Ventilation Emergency Scrubber (VES)*.

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]
[Material permit conditions are indicated by underline and italics]

c. *The Permittee shall install, operate* and maintain *the Phosphine Dynawave Scrubber System to capture particulate matter emissions from the Phosphine Guardian combustion unit in a manner consistent with good air pollution control practices. The effluent of the Phosphine Dynawave System shall be directed to the Ventilation Emergency Scrubber (VES)*.

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]
[Material permit conditions are indicated by underline and italics]

d. *The Permittee shall install, operate* and maintain *the Silane Baghouse to capture particulate matter emissions from the Silane Guardian combustion unit in a manner consistent with good air pollution control practices. The effluent of this baghouse shall be directed to the Ventilation Emergency Scrubber (VES)*.

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]
[Material permit conditions are indicated by underline and italics]

3. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with the following applicable requirements as of the issuance date of this permit: A.A.C. R18-2-702.B.3 and C, and -730.A.1 and B.

[A.A.C. R18-2-325]

B. VOC, HAPs and Gaseous Emissions

1. Emission Limitations and Standards

a. *The Permittee shall not cause, allow or permit to be discharged into the atmosphere arsine emissions in excess of 2.58 grams in any one-hour period*.

[A.A.C. R18-2-306.01 and -331.A.3.a]
[Material permit conditions are indicated by underline and italics]

b. *The Permittee shall not cause, allow or permit to be discharged into the atmosphere arsine emissions in excess of 110.25 grams in any rolling 24-hour period*.

[A.A.C. R18-2-306.01 and -331.A.3.a]
[Material permit conditions are indicated by underline and italics]

c. *The Permittee shall not cause, allow or permit to be discharged into the atmosphere arsine emissions in excess of 779.76 grams in any rolling 365-day period*.

[A.A.C. R18-2-306.01 and -331.A.3.a]
[Material permit conditions are indicated by underline and italics]

d. The Permittee shall not emit gaseous or odorous materials from equipment, operations or premises under his control in such quantities or concentrations as to cause air pollution.

[A.A.C. R18-2-730.D]

e. Materials including solvents or other volatile compounds, paints, acids, alkalis, pesticides, fertilizers and manure shall be processed, stored, used and transported in such a manner and by such means that they will not evaporate, leak, escape or be otherwise discharged into the ambient air so as to cause or contribute to air pollution. Where means are available to reduce effectively the contribution to air pollution from evaporation, leakage or discharge, the installation and use of such control methods, devices or equipment shall be mandatory.

[A.A.C. R18-2-730.F]

f. Where a stack, vent or other outlet is at such a level that fumes, gas mist, odor, smoke, vapor or any combination thereof constituting air pollution is discharged to adjoining property, the Director may require the installation of abatement equipment or the alteration of such stack, vent, or other outlet by the Permittee to a degree that will adequately dilute, reduce or eliminate the discharge of air pollution to adjoining property.

[A.A.C. R18-2-730.G]

2. Air Pollution Controls

a. Arsine Guardian 1

i. *The Permittee shall install, operate* and maintain *the Arsine Guardian 1 combustion unit to capture and destroy arsine emissions associated with arsine synthesis, arsine cylinder processing, and arsine purification operations in a manner consistent with good air pollution control practices*.

ii. *The effluent of the Arsine Guardian 1 combustion unit shall be directed to the Arsine 1 Baghouse for particulate matter collection*.

[A.A.C. R18-2-306.01.A and -331.A.3.d and e]
[Material permit conditions are indicated by underline and italics]

b. Arsine Guardian 2

i. *The Permittee shall install, operate* and maintain *the Arsine Guardian 2 combustion unit to capture and destroy arsine emissions associated with arsine synthesis operations in a manner consistent with good air pollution control practices*.

ii. *The effluent of the Arsine Guardian 2 combustion unit shall be directed to the Arsine 2 Baghouse for particulate matter collection*.

[A.A.C. R18-2-306.01.A and -331.A.3.d and e]
[Material permit conditions are indicated by underline and italics]

c. Phosphine Guardian

i. *The Permittee shall install, operate* and maintain *the Phosphine Guardian combustion unit to capture and destroy phosphine emissions associated with phosphine synthesis, phosphine purification and phosphine cylinder processing operations in a manner consistent with good air pollution control practices*.

ii. *The effluent of the Phosphine Guardian combustion unit shall be directed to the Phosphine Dynawave System for particulate matter collection*.

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]
[Material permit conditions are indicated by underline and italics]

d. Silane Guardian

i. *The Permittee shall install, operate* and maintain *the Silane Guardian combustion unit to capture and destroy silane and diborane emissions associated with silane and diborane cylinder processing operations in a manner consistent with good air pollution control practices*.

ii. *The effluent of the Silane Guardian combustion unit shall be directed to the Silane Baghouse for particulate matter collection*.

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]
[Material permit conditions are indicated by underline and italics]

e. Caustic Wet Scrubber B

i. *The Permittee shall install, operate* and maintain *Caustic Wet Scrubber B to capture and destroy dichlorosilane emissions associated with dichlorosilane cylinder processing operations in a manner consistent with good air pollution control practices*.

ii. *The effluent of Caustic Wet Scrubber B shall be directed to the Ventilation Emergency Scrubber*.

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]
[Material permit conditions are indicated by underline and italics]

f. Caustic Wet Scrubber C

i. *The Permittee shall install, operate* and maintain *Caustic Wet Scrubber C to capture and destroy dichlorosilane emissions associated with dichlorosilane disposal operations in a manner consistent with good air pollution control practices*.

ii. *The effluent of Caustic Wet Scrubber C shall be directed to the Ventilation Emergency Scrubber*.

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]
[Material permit conditions are indicated by underline and italics]

g. Ventilation Emergency Scrubber (VES)

i. *The Permittee shall install, operate* and maintain *the VES to capture and destroy emissions associated with arsine, phosphine, diethyltelluride, dichlorosilane, silane, diborane and trichlorosilane operations in a manner consistent with good air pollution control practices*.

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]
[Material permit conditions are indicated by underline and italics]

3. Testing Requirements

Within 90 days of the issuance date of this permit, the Permittee shall schedule a performance test for arsine emissions from the VES to be conducted no later than 180 days after permit issuance, and to be repeated at least every 12 months thereafter. Testing shall be conducted in accordance with Section XVIII of Attachment "A" of this permit.

[A.A.C. R18-2-312.A]

4. Monitoring, Recordkeeping and Reporting Requirements

a. For purposes of demonstrating compliance with the emission limit in Condition II.B.1.a above, the Permittee shall use the average of the three test runs from the most recent stack test to calculate the hourly arsine emission rate.

[A.A.C. R18-2-306]

b. For purposes of demonstrating compliance with the emission limit in Condition II.B.1.b above, the Permittee shall calculate the emission rate in grams per pound of arsine produced (g/lb arsine), using the average of the three test runs from the most recent stack test, and multiply by the rolling 24-hour total arsine production recorded in accordance with Condition I.B.6 above to determine the rolling 24-hour total emissions of arsine. For purposes of this calculation, arsine is considered "produced" at the end of the batch period.

[A.A.C. R18-2-306]

c. For purposes of demonstrating compliance with the emission limit in Condition II.B.1.c above, the Permittee shall multiply the emission rate (in g/lb arsine) determined in Condition II.B.4.b above by the rolling 365-day total arsine production recorded in accordance with Condition I.B.4 above to determine the rolling 12-month total arsine emissions.

[A.A.C. R18-2-306]

d. For purposes of demonstrating on-going compliance with the emission limitations established in Condition II.B.1 above, the Permittee shall monitor and record the appropriate parameters in accordance with the provisions of Attachment "C" of this permit.

[A.A.C. R18-2-306]

5. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with the following applicable requirements as of the issuance date of this permit: A.A.C. R18-2-730.D, F and G.

[A.A.C. R18-2-325]

III. AMMONIA OPERATIONS

This section applies to the ammonia filling and processing operations.

A. Particulate Matter and Opacity

1. Emission Limitations and Standards

a. The opacity of any plume or effluent from the stack of the ammonia scrubber shall not be greater than 20%.

[A.A.C. R18-2-702.B.3]

b. If the presence of uncombined water is the only reason for an exceedance of any visible emissions requirement in III.A.1.a, the exceedance shall not constitute a violation of the applicable opacity limit.

[A.A.C. R18-2-702.C]

c. In any one hour period, the Permittee shall not cause, allow, or permit the discharge of particulate matter into the atmosphere in excess of the amounts calculated by the following equations:

(1) For process sources having a process weight rate of 60,000 pounds per hour (30 tons per hour) or less, the maximum allowable emissions shall be determined by the following equation:

$E = 4.1P^{0.67}$

Where:

E = the maximum allowable particulate emission rate in pounds-mass per hour

P = the process weight rate in tons-mass per hour

[A.A.C. R18-2-730.A.1.a]

(2) For process sources having a process weight rate greater than 60,000 pounds per hour (30 tons per hour), the maximum allowable emissions shall be determined by the following equation:

$E = 55.0P^{0.11} - 40$

Where E and P are defined as indicated in III.A.1.c(1) above.

[A.A.C. R18-2-730.A.1.b]

d. When applying the process weight rate equations, the Permittee shall utilize the total process weight from all similar units employing a similar type process to determine the maximum allowable emissions of particulate matter.

[A.A.C. R18-2-730.B]

2. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with the following applicable requirements as of the issuance date of this permit: A.A.C. R18-2-702.B.3, A.A.C. R18-2-702.C, A.A.C. R18-2-730.A.1 and A.A.C. R18-2-730.B.

[A.A.C. R18-2-325]

B. Ammonia

Air Pollution Controls

1. *The Permittee shall install, operate* and maintain *the Ammonia Wet Scrubber to capture and destroy ammonia emissions associated with ammonia cylinder processing operations in a manner consistent with good air pollution control practices*.
2. *The Permittee shall operate the Ammonia Wet Scrubber in accordance with Attachment "C" of this permit*.

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]
[Material permit conditions are indicated by underline and italics]

C. Gaseous and Odorous Emissions

1. The Permittee shall not emit gaseous or odorous materials from equipment, operations or premises under his control in such quantities or concentrations as to cause air pollution.

[A.A.C. R18-2-730.D]

2. Materials including solvents or other volatile compounds, paints, acids, alkalis, pesticides, fertilizers and manure shall be processed, stored, used and transported in such a manner and by such means that they will not evaporate, leak, escape or be otherwise discharged into the ambient air so as to cause or contribute to air pollution. Where means are available to reduce effectively the contribution to air pollution from evaporation, leakage or discharge, the installation and use of such control methods, devices or equipment shall be mandatory.

[A.A.C. R18-2-730.F]

3. Where a stack, vent or other outlet is at such a level that fumes, gas mist, odor, smoke, vapor or any combination thereof constituting air pollution is discharged to adjoining property, the Director may require the installation of abatement equipment or the alteration of such stack, vent, or other outlet by the Permittee to a degree that will adequately dilute, reduce or eliminate the discharge of air pollution to adjoining property.

[A.A.C. R18-2-730.G]

4. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with the following applicable requirements as of the issuance date of this permit: A.A.C. R18-2-730.D, F and G.

[A.A.C. R18-2-325]

IV. INTERNAL COMBUSTION ENGINES

This section applies to the Emergency Generator, the Scrubber Pump Engine and the Fire Water Pump Engine.

A. Engine Limitations

1. Fuel Limits

a. The Permittee shall only burn diesel fuel in the internal combustion engines.

b. *The Permittee shall limit the hours of operation for each internal combustion engine to no more than 2,000 hours in any rolling 12-month period*.

[A.A.C. R18-2-306.01.A and -331.A.3.a]
[Material permit conditions are indicated by italics and underline]

2. Recordkeeping

The Permittee shall keep records of the rolling 12-month total hours of operation for each internal combustion engine to demonstrate compliance with the hours limitation in Condition IV.A.1.b above.

[A.A.C. R18-2-306.A.3.c]

B. Opacity

1. Emission Limitation

The Permittee shall not cause, allow, or permit to be emitted into the atmosphere from any internal combustion engine, smoke for any period greater than ten consecutive seconds, which exceeds 40 percent opacity. Visible emissions when starting cold equipment shall be exempt from this requirement for the first ten minutes.

[A.A.C.R18-2-719.E]

2. Monitoring and Recordkeeping

A certified EPA Reference Method 9 observer shall conduct a quarterly survey of visible emissions emanating from the stacks of the internal combustion engines in operation.

a. If the opacity of the emissions observed appears to exceed the standard, the observer shall conduct a certified EPA Reference Method 9 observation.

i. The Permittee shall keep records of the initial survey and any EPA Reference Method 9 observations performed.

ii. These records shall include the emission point observed, location of observer, name of observer, date and time of observation, and the results of the observation.

b. If the observation shows a Method 9 opacity reading in excess of 40%,

i. The Permittee shall report this to ADEQ as excess emission and initiate appropriate corrective action to reduce the opacity below 40%.

ii. The Permittee shall keep a record of the corrective action performed.

[A.A.C. R18-2-306.A.3.c]

3. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-719.E.

[A.A.C. R18-2-325]

C. Particulate Matter

1. Emission Limitations/Standards

a. For the purpose of this Section, the heat input shall be the aggregate heat content of all fuels whose products of combustion pass through a stack or other outlet. The total heat input of all operating internal combustion engines on a plant or premises shall be used for determining the maximum allowable amount of particulate matter which may be emitted.

[A.A.C. R18-2-719.B]

b. The Permittee shall not cause, allow, or permit the emission of particulate matter, caused by combustion of fuel, from any internal combustion engine in excess of the amount calculated by the following equation:

$E = 1.02\ Q^{0.769}$

Where:

E = the maximum allowable particulate emissions rate in pounds mass per hour

Q = the heat input in million Btu per hour

[A.A.C. R18-2-719.C.1]

2. Monitoring, Reporting, and Record Keeping

The Permittee shall keep records of fuel supplier certifications to demonstrate compliance with the PM limit specified in Condition IV.C.1 above. The certification shall contain information regarding the lower heating value of the fuel.

[A.A.C. R18-2-306.A.3.c]

3. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-719.C.1.

[A.A.C. R18-2-325]

D. Sulfur Dioxide

1. Emission Limitations/Standards

a. The Permittee shall burn fuel which limits the emission of sulfur dioxide to 1.0 pound per million Btu heat input.

[A.A.C. R18-2-719.F]

b. The Permittee shall not fire high sulfur fuel (greater than 0.9 percent sulfur in fuel) in the internal combustion engines.

[A.A.C. R18-2-719.H]

2. Monitoring, Reporting, and Record Keeping

a. The Permittee shall keep records of fuel supplier certifications to demonstrate compliance with the sulfur content limit specified in Condition IV.D.1.b above.

[A.A.C. R18-2-306.A.3.c]

b. The Permittee shall report to the Director any daily period during which the sulfur content of the fuel being fired in the internal combustion engines exceeds 0.8%.

[A.A.C. R18-2-719.J]

3. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-719.F, H, & J.

[A.A.C. R18-2-325]

V. FUGITIVE DUST SOURCES

A. Particulate Matter and Opacity

1. Open Areas, Roadways & Streets, Storage Piles, and Material Handling

a. Emission Limitations/Standards

i. Opacity of emissions from any non point source shall not be greater than 40% measured in accordance with the Arizona Testing Manual, Reference Method 9.

[A.A.C. R18-2-614]

ii. The Permittee shall not cause, allow or permit visible emissions, from any point source, in excess of 20 percent opacity. If the presence of uncombined water is the only reason for an exceedance of any visible emissions requirement, the exceedance shall not constitute a violation of the applicable opacity limit.

[A.A.C-R18-2-702.B and C]

iii. The Permittee shall employ the following reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne:

(a) Keep dust and other types of air contaminants to a minimum in an open area where construction operations, repair operations, demolition activities, clearing operations, leveling operations, or any earth moving or excavating activities are taking place, by good modern practices such as using an approved dust suppressant or adhesive soil stabilizer, paving, covering, landscaping, continuous wetting, detouring, barring access, or other acceptable means;

[A.A.C. R18-2-604.A]

(b) Keep dust to a minimum from driveways, parking areas, and vacant lots where motor vehicular activity occurs by using an approved dust suppressant, or adhesive soil stabilizer, or by paving, or by barring access to the property, or by other acceptable means;

[A.A.C. R18-2-604.B]

(c) Keep dust and other particulates to a minimum by employing dust suppressants, temporary paving, detouring, wetting down or by other reasonable means when a roadway is repaired, constructed, or reconstructed;

[A.A.C. R18-2-605.A]

(d) Take reasonable precautions, such as wetting, applying dust suppressants, or covering the load when transporting material likely to give rise to airborne dust;

[A.A.C. R18-2-605.B]

(e) Take reasonable precautions, such as the use of spray bars, wetting agents, dust suppressants, covering the load, and hoods when crushing, handling, or conveying material likely to give rise to airborne dust;

[A.A.C. R18-2-606]

(f) Take reasonable precautions such as chemical stabilization, wetting, or covering when organic or inorganic dust producing material is being stacked, piled, or otherwise stored;

[A.A.C. R18-2-607.A]

(g) Operate stacking and reclaiming machinery utilized at storage piles at all times with a minimum fall of material, or with the use of spray bars and wetting agents;

[A.A.C. R18-2-607.B]

(h) Any other method as proposed by the Permittee and approved by the Director.

[A.A.C. R18-2-306.A.3.c]

b. Monitoring and Recordkeeping Requirements

i. The Permittee shall maintain records of the dates on which any of the activities listed in Conditions V.A.1.a.iii(a) through V.A.1.a.iii(h) above were performed and the control measures that were adopted.

[A.A.C. R18-2-306.A.3.c]

ii. Opacity Monitoring Requirements

(a) A certified Method 9 observer shall conduct a monthly visual survey of visible emissions from the fugitive dust sources. The Permittee shall keep a record of the name of the observer, the date and location on which the observation was made, and the results of the observation.

(b) If the observer sees visible emissions from a fugitive dust source that on an instantaneous basis appears to exceed opacity standard, then the observer shall, if practicable, take a six-minute Method 9 observation.

(1) If the six-minute opacity is less than or equal to opacity standard, the observer shall make a record of the following:

(i) Location, date, and time of the observation; and

(ii) The results of the Method 9 observation.

(2). If the six-minute opacity exceeds opacity standard, then the Permittee shall do the following:

(i) Adjust or repair the controls or equipment to reduce opacity to below the standard; and

(ii) Report it as an excess emission under Section XII.A of Attachment "A".

[A.A.C. R18-2-306.A.3.c]

c. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-604.A, A.A.C. R18-2-604.B, A.A.C. R18-2-605, A.A.C. R18-2-606, A.A.C. R18-2-607, A.A.C. R18-2-612 and A.A.C. R18-2-702.B.

[A.A.C. R18-2-325]

2. Open Burning

a. Emission Limitation/Standard

Except as provided in A.A.C. R18-2-602.C.1, C.2, C.3, and C.4, and except when permitted to do so by either ADEQ or the local officer delegated the authority for issuance of open burning permits, the Permittee shall not conduct open burning.

[A.A.C. R18-2-602]

b. Monitoring and Recordkeeping Requirement

Compliance with the requirements of Condition V.A.2.a above may be demonstrated by maintaining copies of all open burning permits on file.

[A.A.C. R18-2-306.A.3.c]

c. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with the following applicable requirements as of the issuance date of this permit: A.A.C. R18-2-602.

[A.A.C. R18-2-325]

VI. MOBILE SOURCES

The requirements of this Section are applicable to mobile sources which either move while emitting air contaminants or are frequently moved during the course of their utilization but are not classified as motor vehicles, agricultural vehicles, or agricultural equipment used in normal farm operations. Mobile sources shall not include portable sources as defined in A.A.C. R18-2-101.84.

[A.A.C.R18-2-801.A]

A. Particulate Matter and Opacity Standards

1. No mobile source shall emit smoke or dust, the opacity of which exceeds 40 percent as determined by EPA Reference Method 9.

[A.A.C. R18-2-801.B]

2. The Permittee shall not cause, allow, or permit to be emitted into the atmosphere from any off-road machinery, smoke for any period greater than ten consecutive seconds, the opacity of which exceeds 40 percent. Visible emissions when starting cold equipment shall be exempt from this requirement for the first ten minutes. Off-road machinery shall include trucks, graders, scrapers, rollers, locomotives and other construction and mining machinery not normally driven on a completed public roadway.

[A.A.C.R18-2-802]

3. The Permittee shall not cause, allow, or permit to be emitted into the atmosphere from any roadway or site cleaning machinery either smoke or dust for any period greater than ten consecutive seconds, the opacity of which exceeds 40 percent. Visible emissions when starting cold equipment shall be exempt from this requirement for the first ten minutes.

[A.A.C.R18-2-804.A]

4. The Permittee shall not cause, allow or permit the cleaning of any site, roadway, or alley without taking reasonable precautions to prevent particulate matter from becoming airborne. Reasonable precautions may include applying dust suppressants. Earth or other material shall be removed from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water or by other means.

[A.A.C.R18-2-804.B]

B. Permit Shield

Compliance with this Part shall be deemed compliance with the following applicable requirements as of the issuance date of this permit: A.A.C. R18-2-801, A.A.C. R18-2-802 and A.A.C. R18-2-804.

[A.A.C. R18-2-325]

VII. OTHER PERIODIC ACTIVITIES

A. Abrasive Blasting

Particulate Matter and Opacity

1. Emission Limitations/Standards

a. The Permittee shall not cause or allow sandblasting or other abrasive blasting without minimizing dust emissions to the atmosphere through the use of good modern practices. Examples of good modern practices include:

i. wet blasting;

ii. effective enclosures with necessary dust collecting equipment; or

iii. any other method approved by the Director.

[A.A.C. R18-2-726]

b. Opacity

The Permittee shall not cause, allow or permit visible emissions from sandblasting or other abrasive blasting operations in excess of 20% opacity, as measured by EPA Reference Method 9. If the presence of uncombined water is the only reason for an exceedance of any visible emissions requirement, the exceedance shall not constitute a violation of the applicable opacity limit.

[A.A.C. R18-2-702.B and C]

2. Monitoring and Recordkeeping Requirement

Each time an abrasive blasting project is conducted, the Permittee shall log in ink or in an electronic format, a record of the following:

a. The date the project was conducted;

b. The duration of the project; and

c. Type of control measures employed.

[A.A.C. R18-2-306.A.3.c]

3. Permit Shield

Compliance with this Part shall be deemed compliance with A.A.C. R18-2-726, A.A.C. R18-2-702.B.

[A.A.C.R18-2-325]

B. Use of Paints

1. Volatile Organic Compounds

a. Emission Limitations/Standards

While performing spray painting operations, the Permittee shall comply with the following requirements:

i. The Permittee shall not conduct or cause to be conducted any spray painting operation without minimizing organic solvent emissions. Such operations, other than architectural coating and spot painting, shall be conducted in an enclosed area equipped with controls containing no less than 96 percent of the overspray.

[A.A.C.R18-2-727.A]

ii. The Permittee or their designated contractor shall not either:

(a) Employ, apply, evaporate, or dry any architectural coating containing photochemically reactive solvents for industrial or commercial purposes; or

(b) Thin or dilute any architectural coating with a photochemically reactive solvent.

[A.A.C.R18-2-727.B]

iii. For the purposes of Conditions VII.B.1.a.ii and VII.B.1.a.v, a photochemically reactive solvent shall be any solvent with an aggregate of more than 20 percent of its total volume composed of the chemical compounds classified in Conditions VII.B.1.a.iii(a) through VII.B.1.a.iii(c) below, or which exceeds any of the following percentage composition limitations, referred to the total volume of solvent:

(a) A combination of the following types of compounds having an olefinic or cyclo-olefinic type of unsaturation-hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones: 5 percent.

(b) A combination of aromatic compounds with eight or more carbon atoms to the molecule except ethylbenzene: 8 percent.

(c) A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene: 20 percent.

[A.A.C.R18-2-727.C]

iv. Whenever any organic solvent or any constituent of an organic solvent may be classified from its chemical structure into more than one of the groups of organic compounds described in Conditions VII.B.1.a.iii(a) through VII.B.1.a.iii(c) above, it shall be considered to be a member of the group having the least allowable percent of the total volume of solvents.

[A.A.C.R18-2-727.D]

b. Monitoring and Recordkeeping Requirements

i. Each time a spray painting project is conducted, the Permittee shall log in ink, or in an electronic format, a record of the following:

(a) The date the project was conducted;

(b) The duration of the project;

(c) Type of control measures employed;

(d) Material Safety Data Sheets for all paints and solvents used in the project; and

(e) The amount of paint consumed during the project.

ii. Architectural coating and spot painting projects shall be exempt from the recordkeeping requirements of Condition VII.B.1.b.i above.

[A.A.C. R18-2-306.A.3.c]

c. Permit Shield

Compliance with this Part shall be deemed compliance with A.A.C.R18-2-727.

[A.A.C.R18-2-325]

2. Opacity

a. Emission Limitation/Standard

The Permittee shall not cause, allow or permit visible emissions from painting operations in excess of 20% opacity, as measured by EPA Reference Method 9. If the presence of uncombined water is the only reason for an exceedance of any visible emissions requirement, the exceedance shall not constitute a violation of the applicable opacity limit.

[A.A.C. R18-2-702.B]

b. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C.R18-2-702.B.

[A.A.C. R18-2-325]

C. Demolition/Renovation - Hazardous Air Pollutants

1. Emission Limitation/Standard

The Permittee shall comply with all of the requirements of 40 CFR 61 Subpart M (National Emissions Standards for Hazardous Air Pollutants - Asbestos).

[A.A.C. R18-2-1101.A.8]

2. Monitoring and Recordkeeping Requirement

The Permittee shall keep all records required by this Section in a file. The required records shall include the "NESHAP Notification for Renovation and Demolition Activities" form and all supporting documents.

[A.A.C. R18-2-306.A.3.c]

3. Permit Shield

Compliance with the conditions of this Part shall be deemed compliance with A.A.C. R18-2-1101.A.8.

[A.A.C. R18-2-325]

VIII. AMBIENT MONITORING

A. The Permittee shall monitor hydride gas and acid gas concentrations at the facility fenceline in two locations:

1. Near the Northeast corner of the fenceline.

2. Near the Southwest corner of the fenceline.

[A.A.C. R18-2-306.A.3.c]

B. The Permittee shall continuously monitor the two fenceline locations specified in Condition VII.A. Data shall be collected at each of the two locations once per second. If no changes are detected in 30 consecutive data points, only one data point is required to be stored. When the data is changing, all points shall be stored.

[A.A.C. R18-2-306.A.3.c]

C. *The Permittee shall install*, operate, maintain *and calibrate the monitoring system in accordance with the manufacturer's specifications*.

[A.A.C. R18-2-306.A.3.c and -331.A.3.c]
[Material permit conditions are indicated by underline and italics]

D. The following maintenance activities shall be recorded on a maintenance log.

1. Perform daily inspection to check sample line flows and analyzer chemcassette status on any day when production occurs at the facility. Replace sample line filters and analyzer chemcassettes as necessary.

2. Perform preventative maintenance according to the manufacturer's Vertex series preventative maintenance checklist at least three times per year.

[A.A.C. R18-2-306.A.3.c]

E. Within 60 days after the issuance date of this permit, the Permittee shall submit a significant permit revision application to incorporate an Ambient Monitoring Plan into the permit. Until such time as the significant permit revision is issued, the Permittee shall monitor the two fenceline locations as required in Conditions VIII.A through D above.

[A.A.C. R18-2-306.A.3.c]

ATTACHMENT "C": PARAMETRIC MONITORING PLAN

Air Quality Control Permit No. 31094
For
Praxair, Inc.

I. GENERAL REQUIREMENTS

A. Prior to implementing any changes to this Attachment, the Permittee shall obtain the Director's approval pursuant to the appropriate provisions of Condition XVI of Attachment "A".

B. At the time that the Permittee submits an air quality permit application or notification pursuant to Condition XVI of Attachment "A" (including changes that do not require a permit revision) for the construction, modification or replacement of an air pollution control device, the Permittee shall develop and submit an Operation and Maintenance Plan that contains the following information:

1. The process parameters that provide reasonable assurance that the control device is achieving the designed level of control;

2. The operating parameter set points for each process parameter to be monitored; and

3. A detailed preventative maintenance plan.

C. The Permittee shall inspect and maintain all equipment in accordance with Condition I.A.1 of Attachment "B".

[A.A.C. R18-2-306.A.3.c]

II. ARSINE GUARDIANS AND BAGHOUSES

A. The following process parameters shall be monitored and recorded on a process log at the intervals listed below:

1. Reaction Chamber Temperature, in degrees Celsius, shall be recorded continuously.

2. Baghouse pressure differential in Arsine Baghouses 1A and 2, in inches of H_2O, shall be recorded continuously.

3. Baghouse pressure differential in Arsine Baghouse 1B, in inches of H_2O, shall be recorded once per day.

[A.A.C. R18-2-306.A.3.c]

B. The Permittee shall maintain records of all maintenance activities in a log that identifies the date, time and description of the maintenance activity, as well as a reason for the maintenance activity that was performed.

[A.A.C. R18-2-306.A.3.c]

C. Operating Parameter Setpoints

Operating parameters listed in II.A above shall be kept within the values listed in Table C-1 below.

Table C-1: Operating Parameters for Arsine Operations

	Reaction Chamber Temperature	Baghouse ∆P
Target	575 °C	4" H_2O
Max	900 °C	10" H_2O
Min	539 °C	0.2" H_2O

[A.A.C. R18-2-306.A.3.c]

D. Deviations

1. A deviation is defined as:

   a. Any Reaction Chamber temperature reading less than 539°C while the Guardian is in operation or arsine is being vented to the control system.

   b. Any Baghouse pressure differential less than 0.2" H_2O or greater than 10" H_2O while the baghouse is in operation or arsine is being vented to the control system.

2. Upon detection of a deviation, the Permittee shall restore operation of the equipment to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include:

   a. Minimizing the period of any startup, shutdown, or malfunction, and

   b. Taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of the deviation. Such actions may include:

      i. Initial inspection and evaluation,

      ii. Recording that operations returned to normal without operator action, or

      iii. Any necessary follow-up actions to return operations to within the parameters listed in Table C-1 above.

   [A.A.C. R18-2-306.A.3.c]

3. Deviations shall be reported pursuant to Section XII of Attachment "A" of this permit, along with any available information about total hydride concentration in the exhaust gas.

   [A.A.C. R18-2-310.01 and -306.A.3.c]

4. The Permittee shall submit reports of all deviations along with the compliance certifications required by Section VII of Attachment "A." The reports shall include, at a minimum, the following:

   a. Summary information on the number, duration and cause (including unknown cause, if applicable) of the deviation, and the corrective actions taken.

   b. Summary information on the number, duration and cause (including unknown cause, if applicable) for monitoring downtime incidents (other than downtime associated with zero and span or other calibration checks, if applicable).

   [A.A.C. R18-2-306.A.3.c]

III. PHOSPHINE GUARDIANS AND DYNAWAVE

A. The following process parameters shall be monitored and recorded on a process log at the intervals listed below:

1. Reaction Chamber Temperature, in degrees Celsius, shall be recorded continuously.

2. Dynawave Spray Nozzle Inlet Pressure, in psig, shall be manually recorded at least once per day.

3. Dynawave pressure differential, in inches of H_2O, shall be recorded at least once per day.

[A.A.C. R18-2-306.A.3.c]

B. The Permittee shall maintain records of all maintenance activities in a log that identifies the date, time and description of the maintenance activity, as well as a reason for the maintenance activity that was performed.

[A.A.C. R18-2-306.A.3.c]

C. Operating Parameter Setpoints

Operating parameters listed in III.A above shall be kept within the values listed in Table C-2 below.

Table C-2: Operating Parameters for Phosphine Operations

	Reaction Chamber Temperature	Dynawave Spray Nozzle Inlet Pressure	Dynawave ∆P
Target	575 °C	15-20 psig	22" H_2O
Max	900 °C	30 psig	31" H_2O
Min	350 °C	5 psig	0.5" H_2O

[A.A.C. R18-2-306.A.3.c]

D. Deviations

1. A deviation is defined as:

   a. Any Reaction Chamber temperature reading less than 350°C while the unit is in operation or phosphine is being vented to the control system.

   b. Any Dynawave spray nozzle inlet pressure less than 5 psig or greater than 30 psig while the unit is in operation or phosphine is being vented to the control system.

   c. Any Dynawave pressure differential less than 0.5" H_2O or greater than 31" H_2O while the unit is in operation or phosphine is being vented to the control system.

[A.A.C. R18-2-306.A.3.c]

2. Upon detection of a deviation, the Permittee shall restore operation of the equipment to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include:

   a. Minimizing the period of any startup, shutdown, or malfunction, and

   b. Taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of the deviation. Such actions may include:

      i. Initial inspection and evaluation,

      ii. Recording that operations returned to normal without operator action, or

iii. Any necessary follow-up actions to return operations to within the parameters listed in Table C-2 above.

[A.A.C. R18-2-306.A.3.c]

3. Deviations shall be reported pursuant to Section XII of Attachment "A" of this permit, along with any available information about total hydride concentration in the exhaust gas.

[A.A.C. R18-2-310.01 and -306.A.3.c]

4. The Permittee shall submit reports of all deviations along with the compliance certifications required by Section VII of Attachment "A." The reports shall include, at a minimum, the following:

a. Summary information on the number, duration and cause (including unknown cause, if applicable) of the deviation, and the corrective actions taken.

b. Summary information on the number, duration and cause (including unknown cause, if applicable) for monitoring downtime incidents (other than downtime associated with zero and span or other calibration checks, if applicable).

[A.A.C. R18-2-306.A.3.c]

IV. SILANE GUARDIANS AND BAGHOUSES

A. The following process parameters shall be monitored and recorded on a process log at the intervals listed below:

1. Reaction Chamber Temperature, in degrees Celsius, shall be recorded continuously.

2. Baghouse pressure differential, in inches of H_2O, shall be recorded at least once per day for the baghouse that is in operation.

[A.A.C. R18-2-306.A.3.c]

B. The Permittee shall maintain records of all maintenance activities in a log that identifies the date, time and description of the maintenance activity, as well as a reason for the maintenance activity that was performed.

[A.A.C. R18-2-306.A.3.c]

C. Operating Parameter Setpoints

Operating parameters listed in IV.A above shall be kept within the values listed in Table C-3 below.

Table C-3: Operating Parameters for Silane Operations

	Reaction Chamber Temperature	Baghouse ∆P
Target	350 °C	4" H_2O
Max	900 °C	10" H_2O
Min	100 °C	0.2" H_2O

[A.A.C. R18-2-306.A.3.c]

D. Deviations

1. A deviation is defined as:

a. Any Reaction Chamber temperature reading less than 100°C while the unit is in operation or silane is being vented to the control system.

b. Any Baghouse pressure differential less than 0.2" H_2O or greater than 10" H_20 while the baghouse is in operation or silane is being vented to the control system.

2. Upon detection of a deviation, the Permittee shall restore operation of the equipment to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include:

a. Minimizing the period of any startup, shutdown, or malfunction, and

b. Taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of the deviation. Such actions may include:

i. Initial inspection and evaluation,

ii. Recording that operations returned to normal without operator action, or

iii. Any necessary follow-up actions to return operations to within the parameters listed in Table C-3 above.

[A.A.C. R18-2-306.A.3.c]

3. Deviations shall be reported pursuant to Section XII of Attachment "A" of this permit, along with any available information about total hydride concentration in the exhaust gas.

[A.A.C. R18-2-310.01 and -306.A.3.c]

4. The Permittee shall submit reports of all deviations along with the compliance certifications required by Section VII of Attachment "A." The reports shall include, at a minimum, the following:

a. Summary information on the number, duration and cause (including unknown cause, if applicable) of the deviation, and the corrective actions taken.

b. Summary information on the number, duration and cause (including unknown cause, if applicable) for monitoring downtime incidents (other than downtime associated with zero and span or other calibration checks, if applicable).

[A.A.C. R18-2-306.A.3.c]

V. DICHLOROSILANE WET SCRUBBER

A. The following process parameters shall be monitored and recorded on a process log at the intervals listed below:

1. Caustic strength (strength of scrubber solution), in mL acid, shall be recorded at least once per day.

2. Tower flow rate (flow rate of scrubber solution in the scrubber tower), in gallons per minute, shall be recorded at least once per day.

3. Pressure differential across the orifice plate, in inches H_2O, shall be recorded at least once per day.

[A.A.C. R18-2-306.A.3.c]

B. The Permittee shall maintain records of all maintenance activities in a log that identifies the date, time and description of the maintenance activity, as well as a reason for the maintenance activity that was performed.

[A.A.C. R18-2-306.A.3.c]

C. Operating Parameter Setpoints

Operating parameters listed in V.A above shall be kept within the values listed in Table C-4 below.

Table C-4: Operating Parameters

	Caustic Strength	Tower Flow Rate	∆P Across Orifice Plate (measured)
Target	> 10 mL acid	10-15 gpm	0.8" H_2O
Max	N/A	N/A	3.0" H_2O
Min	5 mL acid	8 gpm	0.2" H_2O

[A.A.C. R18-2-306.A.3.c]

D. Deviations

1. A deviation is defined as:

   a. Any Caustic strength less than 5 mL acid while the dichlorosilane wet scrubber is in operation or dichlorosilane is being vented to the control system.

   b. Any tower flow rate below 8 gpm while the dichlorosilane wet scrubber is in operation or dichlorosilane is being vented to the control system.

   c. Any instantaneous pressure differential reading that is less than 0.2" H_20 or greater than 3.0" H_20 while the dichlorosilane wet scrubber is in operation or dichlorosilane is being vented to the control system.

2. Upon detection of a deviation, the Permittee shall restore operation of the equipment to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include:

   a. Minimizing the period of any startup, shutdown, or malfunction, and

   b. Taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of the deviation. Such actions may include:

      i. Initial inspection and evaluation,

      ii. Recording that operations returned to normal without operator action, or

      iii. Any necessary follow-up actions to return operations to within the parameters listed in Table C-4 above.

   [A.A.C. R18-2-306.A.3.c]

3. Deviations shall be reported pursuant to Section XII of Attachment "A" of this permit, along with any available information about total hydride concentration in the exhaust gas.
   [A.A.C. R18-2-310.01 and -306.A.3.c]

4. The Permittee shall submit reports of all deviations along with the compliance certifications required by Section VII of Attachment "A." The reports shall include, at a minimum, the following:

a. Summary information on the number, duration and cause (including unknown cause, if applicable) of the deviation, and the corrective actions taken.

b. Summary information on the number, duration and cause (including unknown cause, if applicable) for monitoring downtime incidents (other than downtime associated with zero and span or other calibration checks, if applicable).

[A.A.C. R18-2-306.A.3.c]

VI. AMMONIA SCRUBBER

A. The following process parameters shall be monitored and recorded on a process log at the intervals listed below:

1. NH_4OH Concentration, in percent, shall be recorded at least once per day.

2. Tank Level, in percent of full, shall be recorded at least once per day.

3. Mini Scrubber Pump Discharge Pressure, in psig, shall be recorded at least once per day.

[A.A.C. R18-2-306.A.3.c]

B. The Permittee shall maintain records of all maintenance activities in a log that identifies the date, time and description of the maintenance activity, as well as a reason for the maintenance activity that was performed.

[A.A.C. R18-2-306.A.3.c]

C. Operating Parameter Setpoints

Operating parameters listed in VI.A above shall be kept within the values listed in Table C-5 below.

Table C-5: Operating Parameters

	NH_4OH Concentration	Tank Level	Mini Scrubber Pump Discharge Pressure
Target	19-30%	50-65%	25 psig
Max	30%	95%	40 psig
Min	N/A	15%	5 psig

[A.A.C. R18-2-306.A.3.c]

D. Deviations

1. A deviation is defined as:

a. Any NH_4OH concentration of greater than 30% while the ammonia scrubber is in operation or ammonia is being vented to the control system.

b. Any tank level less than 15% full (except when the tank is being emptied or refilled) or greater than 95% full while the ammonia scrubber is in operation or ammonia is being vented to the control system.

c. Any mini scrubber pump discharge pressure greater than 40 psig or less than 5 psig while the ammonia scrubber is in operation or ammonia is being vented to the control system.

2. Upon detection of a deviation, the Permittee shall restore operation of the equipment to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include:

a. Minimizing the period of any startup, shutdown, or malfunction, and

b. Taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of the deviation. Such actions may include:

i. Initial inspection and evaluation,

ii. Recording that operations returned to normal without operator action, or

iii. Any necessary follow-up actions to return operations to within the parameters listed in Table C-5 above.

[A.A.C. R18-2-306.A.3.c]

3. Deviations shall be reported pursuant to Section XII of Attachment "A" of this permit.
[A.A.C. R18-2-310.01]

4. The Permittee shall submit reports of all deviations along with the compliance certifications required by Section VII of Attachment "A." The reports shall include, at a minimum, the following:

a. Summary information on the number, duration and cause (including unknown cause, if applicable) of the deviation, and the corrective actions taken.

b. Summary information on the number, duration and cause (including unknown cause, if applicable) for monitoring downtime incidents (other than downtime associated with zero and span or other calibration checks, if applicable).

[A.A.C. R18-2-306.A.3.c]

VII. VENTILATION EMERGENCY SCRUBBER (VES)

A. The following process parameters shall be monitored and recorded on a process log at the intervals listed below:

1. Potassium Permanganate ($KMnO_4$) concentration, in percent $KMnO_4$, shall be recorded at least once per day.

2. $KMnO_4$ flow rate, in gallons per minute, shall be recorded continuously

3. Air flow rate, in cubic feet per minute, shall be recorded continuously.

[A.A.C. R18-2-306.A.3.c]

B. The primary $KMnO_4$ electric pump shall be backed up by a diesel fuel powered pump. In the event of an electric motor pump failure, loss of flow must be detected via motor amperage or other method as approved by ADEQ, and the diesel pump must start up automatically.

[A.A.C. R18-2-306.A.3.c]

C. The $KMnO_4$ solution shall be tested every week to determine the % dissolved solids and % suspended solids, except during a week in which a muck-out is scheduled.

[A.A.C. R18-2-306.A.3.c]

D. The Permittee shall maintain records of all maintenance activities in a log that identifies the date, time and description of the maintenance activity, as well as a reason for the maintenance activity that was performed.

[A.A.C. R18-2-306.A.3.c]

E. Operating Parameter Setpoints

Operating parameters listed in VII.A above shall be kept within the values listed in Table C-6 below.

Table C-6: Operating Parameters

	$KMnO_4$ Concentration	$KMnO_4$ Flow Rate	Air Flow Rate
Target	4%	3,000 gpm	25,000 cfm
Max	N/A	N/A	27,900 cfm
Min	3%	2,649 gpm	N/A

[A.A.C. R18-2-306.A.3.c]

F. Deviations

1. A deviation is defined as:

   a. Any $KMnO_4$ concentration less than 3% while the VES is in operation or gases are being vented to the control system.

   b. Any hourly average $KMnO_4$ flow rate less than 2,649 gpm while the VES is in operation or gases are being vented to the control system.

   c. Any hourly average air flowrate greater than 27,900 cfm while the VES is in operation or gases are being vented to the control system.

2. Upon detection of a deviation, the Permittee shall restore operation of the equipment to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include:

   a. Minimizing the period of any startup, shutdown, or malfunction, and

   b. Taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of the deviation. Such actions may include:

      i. Initial inspection and evaluation,

      ii. Recording that operations returned to normal without operator action, or

      iii. Any necessary follow-up actions to return operations to within the parameters listed in Table C-6 above.

   [A.A.C. R18-2-306.A.3.c]

3. During times when the liquid flow meter is inoperative, the Permittee shall demonstrate compliance with the potassium permanganate liquid flow rate in parameters in the Parametric Monitoring Plan in this Attachment by manually verifying the pump motor amperage and the potassium permanganate level in the VES at least twice per 8-hour shift. An alternative monitoring approach may be used with prior written approval by the Director. The Permittee shall not operate for more than 7 days with the liquid flow meter inoperative. As long as the Permittee manually verifies the pump motor amperage and the potassium permanganate level in the VES at least twice per 8-hour shift or performs

other Director-approved alternative monitoring, then periods of time when the liquid flow meter is inoperative shall not constitute a deviation of this permit.

[A.A.C. R18-2-306.A.2]

4. Deviations shall be reported pursuant to Section XII of Attachment "A" of this permit, along with any available information about total hydride concentration in the exhaust gas.

[A.A.C. R18-2-310.01 and -306.A.3.c]

5. The Permittee shall submit reports of all deviations along with the compliance certifications required by Section VII of Attachment "A." The reports shall include, at a minimum, the following:

   a. Summary information on the number, duration and cause (including unknown cause, if applicable) of the deviation, and the corrective actions taken.

   b. Summary information on the number, duration and cause (including unknown cause, if applicable) for monitoring downtime incidents (other than downtime associated with zero and span or other calibration checks, if applicable).

[A.A.C. R18-2-306.A.3.c]

ATTACHMENT "D": EQUIPMENT LIST

Air Quality Control Permit No. 31094
For
Praxair, Inc.

EQUIPMENT TYPE	MAX. CAPACITY	MAKE	MODEL	SERIAL NUMBER	DATE OF MFG.
Ventilation Emergency Scrubber	30,000 scfm	Construction International, Inc.	Countercurrent packed column wet scrubber	A2447-1	N/A
Arsine Guardian 1	2,000 scfm	Hoechst Celanese	Guardian 8	N/A	N/A
Arsine Guardian 2	2,000 scfm	ATMI	Guardian 8	GB-03176	N/A
Arsine Baghouse 1A		Mikropul Environmental Systems	64S8 TRH"C"	930368 H1	N/A
Arsine Baghouse 1B		Hoechst Celanese	N/A	N/A	N/A
Arsine Baghouse 2		Mikropul Environmental Systems	64S8 TRH	221033	N/A
Silane Guardian	2,000 scfm	MG Industries	Guardian 8	N/A	N/A
Silane Baghouses 1 and 2	1,800 acfm	STACLEAN Diffuser Co.	49-8-ADR	10041 and 10042	N/A
Phosphine Guardian	1,300 scfm	Hoechst Celanese	Guardian 8	N/A	N/A
Phosphine Dynawave	1,300 scfm	Monsanto Enviro-Chem	Reverse Jet Scrubbing System	MEN 8000	N/A
TCS Wet Scrubber A	200 scfm	Advanced Air Technologies	Apollo Series	N/A	N/A
DCS Wet Scrubber B	200 scfm	Advanced Air Technologies	Apollo Series	N/A	N/A
DCS Wet Scrubber C	200 scfm	Advanced Air Technologies	Apollo Series	Job #021093	N/A
TCS Wet Scrubber D	200 scfm	Advanced Air Technologies	Apollo Series	Job #021093	N/A
Emergency Generator	535 hp	Cummins Diesel	N/A	30125276	N/A
Diesel Scrubber Pump	115 hp	Cummins Diesel	N/A	44156598	N/A
Diesel Fire Water Pump	244 hp	Cummins Diesel	N/A	44501160	N/A
Cylinder Shot Blaster & Dust Collector	240 cyl/day	Viking Corp	GC112 (blaster) 9DC (collector)	06-20-17702	April 2006
Spray Paint Booth	6'x7'2"x6'	DeVilbiss Company	XDF-6000 (M)	N/A	N/A
Ammonia Recovery System	N/A	RM Technologies	N/A	N/A	July 2006